

STREBLACANTHUS MONOSPERMUS (ACANTHACEAE), A GENUS AND SPECIES NEW TO THE FLORA OF MEXICO

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ABSTRACT. *Streblacanthus monospermus* is documented from Mexico and North America for the first time. The species, previously known only from lowland rain forests in Costa Rica and Panama, was recently collected in the Chimalapa region of Oaxaca. Affinities of *Streblacanthus* and distinctive characteristics of *S. monospermus* within the genus are noted.

Recent collecting activities in the lowland rain forests of southern Mexico, particularly the Uxpanapa region of southeastern Veracruz and the Chimalapa region of adjacent Oaxaca, have resulted in several geographic range extensions and new taxa of Acanthaceae (e.g., Daniel 1991, 1999). Herewith, the genus *Streblacanthus* is reported from Mexico and North America for the first time based on a collection from the Chimalapa region of Oaxaca. The rarely collected and little-known species, *S. monospermus*, is described and illustrated.

Streblacanthus has been treated as a tropical American genus of four species that range from northern Argentina to southeastern Costa Rica (Daniel 1996). Lindau (1895) placed the genus in his tribe Odontonemeae, subtribe Odontoneminae. Bremekamp (1965) included Lindau's Odontonemeae in a much-expanded Justiceae. Recent phylogenetic analyses of Justiceae based on molecular markers (McDade et al. 2000) place *Streblacanthus* as sister to *Pachystachys* Nees in a clade ("Tetramerium Lineage") that includes genera from several of Lindau's tribes. In addition to their molecular synapomorphies, most genera in this lineage share the following traits: an androecium of two stamens (no staminodes), tricolporate-hexapseudocolpate pollen, and a basic chromosome number of 18. *Streblacanthus* is distinguishable from most other genera in this lineage by the combination of its corolla with an elongate, subcylindric tube and capsule with a flattened, subcircular head. *Ecbolium* Kurz, an Old World genus of 22 species (Vollersen 1989), and *Yeatesia* Small, a North American genus of three species (Hilsenbeck 1989), also share these characteristics. Studies addressing the generic distinctions among these three genera are much needed.

At least 36 genera of Acanthaceae are known to be native in Mexico (Daniel 1998). Two other genera may be native there; *Geissomeria* Lindl. and *Pachystachys* are reported from Mexico based on unresolved nineteenth century collections (Daniel 1998; Wasshausen 1986). The addition of another genus of Acanthaceae native to Mexico is not altogether surprising. *Staurogyne* Wall., an acanthaceous genus previously known from southern Central America and South America, was recently reported from the country for the first time (Daniel & Lott 1993). Furthermore, the herbaceous flora of various regions in Mexico remains inadequately known. This is particularly true for the rain forests in the vicinity of the Gulf coast of Mexico.

The Uxpanapa-Chimalapa region harbors a significant number of Acanthaceae common in, or restricted to, wet forests: e.g., *Aphelandra aurantiaca* Lindl., *A. wendtii*

T.F. Daniel, *Justicia aurea* Schltdl., *J. fimbriata* (Nees) V. A. W. Graham, *Louleridium mexicanum* (Baill.) Standl., *L. parayi* Miranda, *Mendoncia guatemalensis* Standl. & Steyerl., *Mirandea sylvatica* Acosta, *Pseuderanthemum verapazense* Donn. Sm., *Ruellia harveyana* Stapf, *R. jussieuoides* Schltdl. & Cham., *Schaueria parviflora* (Leonard) T. F. Daniel, and *Stenandrium chameranthemoideum* Oerst. At least three species of Acanthaceae are endemic to this region, *Justicia chimalapensis* T. F. Daniel, *J. wendtii* T. F. Daniel, and *Lophostachys uxpanapensis* Acosta. Based on known occurrences of taxa, the acanthaceous affinities of the Uxpanapa-Chimalapa region lie with the Los Tuxtlas region of Veracruz to the northwest and the lowlands of Tabasco and Chiapas to the east. Floristic affinities among the lowland rain forests in these areas, together with the Tuxtepec area of northern Oaxaca, were noted by Wendt (1993) for the rain forest canopy tree flora; each of these regions was also noted by Wendt to be of particular importance for conservation efforts. Further explorations in and collections from these areas will undoubtedly yield additional new taxa and significant geographic range extensions.

Streblacanthus Kuntze, Revis. gen. pl. 1: 497. 1891.—TYPE: *Streblacanthus monospermus* Kuntze.

Sciaphyllum Bremek., Recueil Trav. Bot. Néerl. 37: 298. 1940.—TYPE: *Sciaphyllum amoenum* Bremek. [= *Streblacanthus roseus* (Radlk.) B. L. Burtt].

Erect perennial herbs or shrubs with cystoliths. Leaves opposite, petiolate, margin entire to subcrenate. Inflorescence of axillary or terminal dichasiate spikes or racemes; dichasia opposite (to alternate), 1–many-flowered, sessile, subtended by a bract. Bracts opposite (to alternate), green, margin entire. Flowers homostylous, sessile to pedicellate, subtended by 2 homomorphic bracteoles. Calyx deeply 4–5-lobed, lobes homomorphic (or subequal in length). Corolla pinkish to purplish or white, subsalverform or with a relatively long and slender tube and a bilabiate limb, tube elongate and subcylindric, sometimes expanded distally into a throat, limb subactinomorphic to bilabiate, upper lip 2-lobed, lower lip 3-lobed, corolla lobes imbricate in bud. Stamens 2, inserted near apex of corolla tube, exerted from mouth of corolla, anthers 2-theous, thecae homomorphic or heteromorphic, lacking basal appendages, dehiscing toward lower lip (i.e., flower nototribal), if homomorphic then thecae equal in size, parallel, and equally to subequally inserted, if heteromorphic then thecae unequal in size and superposed (the proximal theca abortive and greatly reduced); pollen spherical to prolate, 3-colporate, 6-pseudocolpate, pseudocolpi 2 per mesocolpium (these sometimes fused near poles forming pseudocolpal ellipses), exine reticulate. Style exerted from mouth of corolla, stigma 2-lobed or appearing discoid to subcapitate, lobes sometimes indistinct. Capsule stipitate, head subcircular, retinacula present, septa with attached retinacula remaining attached to inner wall of mature capsule. Seeds 2–4, homomorphic, lenticular, lacking trichomes. Base chromosome number: $x = 18$.

Eleven names have been used in *Streblacanthus* but only four species are currently recognized in this wholly American genus (Daniel 1996). The relationships among these species have never been fully studied.

Streblacanthus monospermus Kuntze, Revis. gen. pl. 2: 498. 1891.—TYPE: COSTA RICA. [Without province:] “auf dem Höhenzug südlich von San Jose in Costarica” (fide protologue), “bei S. José” (fide specimen), Jun 1874, O. Kuntze s.n. (holotype: NY!).

Streblacanthus macrophyllus Lindau in H. Pittier, Prim. Fl. Costaric. 2: 306. 1900.—TYPE: COSTA RICA. Limón: “in silvis ad flumen Zhorquin [Yorkín] (Pitt. n. 8547), alt. 50 m.” (fide protologue), “forêts de la boca de Zhorquin (Talamanca)” (fide specimen at US), Mar 1894, *H. Pittier 8547* (holotype: B, destroyed, photos: F! GH! US!; isotype: US!). The original label on the isotype at US, which was determined by Lindau, notes A. Tonduz as the collector. Photos of the holotype at B reveal that Pittier was noted as the collector on labels of that specimen.

Streblacanthus longiflorus Cufod., Arch. Bot. Sist. 10: 48. 1934.—TYPE: COSTA RICA. Limón: La Castilla–Los Negritos, 12 km from the mouth of the Río Reventazón, riverside forest, 30 m, 7 May 1930, *G. Cufodontis 336* (holotype: W, photos: F! GH! US!).

Fig. 1

Herbs to 4 dm tall. Young stems subterete to subquadrate, bifariously pubescent with flexuose-retrorse eglandular trichomes 0.5–1.3 mm long. Leaves petiolate, petioles to 2.5 cm long, densely pubescent with antrorse eglandular trichomes adaxially and glabrous or nearly so abaxially, blades ovate to elliptic, 9.5–11.8 cm long, 3.4–4.1 cm wide, 2.7–3.0 times longer than wide, acuminate at apex, acute at base, surfaces pubescent along midvein (less densely so on abaxial surface) with antrorse eglandular trichomes, otherwise glabrous or nearly so, margin ciliolate with antrorse eglandular trichomes. Inflorescence of (axillary and) terminal pedunculate spikes to 4 cm long (including peduncle and excluding flowers), subtended by a pair of greatly reduced leaves from whose axils spikes sometimes arise, peduncles (from reduced leaves to first pair of bracts) to 14 mm long, evenly pubescent with erect to flexuose eglandular and glandular trichomes 0.2–1.6 mm long, rachis pubescent like peduncles; dichasia 1-flowered, opposite to subopposite, sessile; flowers sessile. Bracts opposite to subopposite, sessile, elliptic to obovate, 6.5–10 mm long, 2.3–2.6 mm wide, abaxial surface pubescent with erect to flexuose glandular trichomes 1–2.3 mm long. Bracteoles linear to lanceolate, 3.5–5 mm long, 0.5–0.9 mm wide, abaxial surface pubescent with mostly glandular trichomes 0.2–0.6 mm long. Calyx 4-lobed, 3.5 mm long, lobes lanceolate, 3 mm long, 0.6 mm wide, abaxially pubescent with antrorse to erect to flexuose glandular and eglandular trichomes 0.1–0.3 mm long. Corolla subsalverform, purplish, 3.6–3.7 cm long, externally pubescent with flexuose eglandular trichomes (0.3–) 0.7–1.5 mm long, tube subcylindric (becoming narrower distally), 2.6–2.8 cm long, 1–1.2 mm in diameter near midpoint, throat absent, upper lip 7.5–10 mm long, lobes 5.5–7 mm long, 3–4 mm wide, lower lip 8–10 mm long, lobes 7.5–9.5 mm long, 4–5 mm wide, lobes abruptly acuminate at apex (or with 2–3 apical teeth). Stamens 2–2.5 mm long, inserted near mouth of corolla, exerted 1.5–2 mm beyond mouth of corolla, filaments apically pubescent with flexuose eglandular trichomes to 0.5 mm long, thecae superposed (0.3–0.5 mm distant), distal theca fertile, 0.8–1 mm long, asymmetric when dehisced, proximal theca sterile, appendage-like, 0.2 mm long; pollen prolate spheroidal to subprolate (P:E = 1.14–1.25). Style 1.9–2.3 cm long, glabrous, stigma discoid, 0.1 mm long. Capsule 1.5–1.7 cm long, pubescent with erect to flexuose eglandular trichomes 0.5–2.1 mm long, stipe 7–8.5 mm long, head 8–9 mm long. Seeds 4, flat, subcordate, 5 mm long, 5 mm wide, surfaces papillose, margin swollen, entire to subcrenate.

Phenology. Flowering and fruiting: March.

Distribution and habitat (Fig. 2). Known disjunctly from southern Mexico (Oaxaca) and from adjacent regions of Costa Rica (Limón) and Panama (Bocas

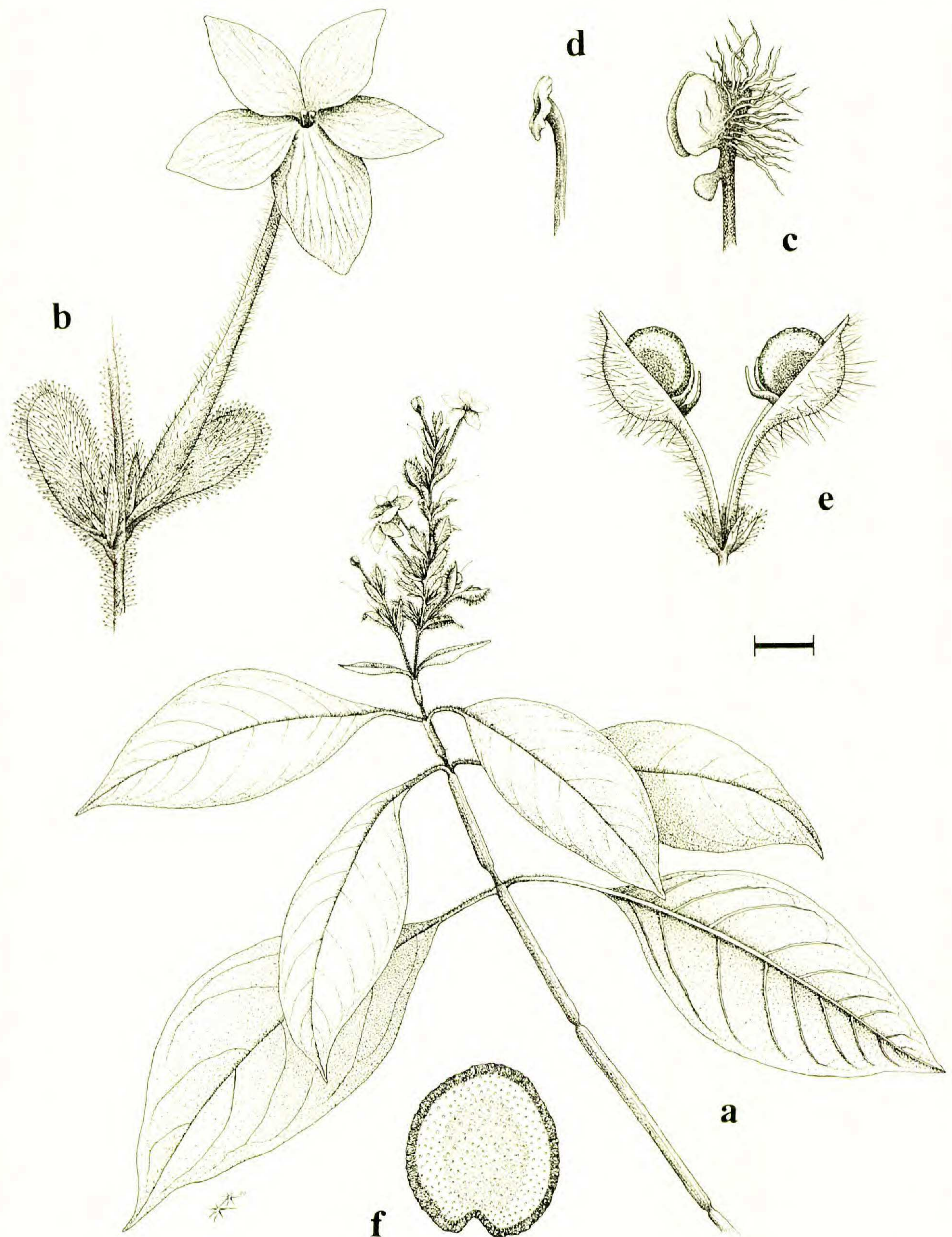


FIG. 1. *Streblacanthus monospermus*. a. Habit. b. Inflorescence node with flower. c. Apex of stamen with thecae. d. Apex of style with stigma. e. Capsule with seeds. f. Seed. Scale bar: a, 2.1 cm; b, 3 mm; c, 0.55 mm; d, 0.1 mm; e, 3.7 mm; f, 1.7 mm. (Based on: a–c, Daniel *et al.* 6230; e–f, Hernández G. 1060.)

del Toro); in Mexico, plants occur in a lowland rain forest with *Ficus*, *Dialium*, *Vatairea*, and *Manilkara* at an elevation of 250 m.

ADDITIONAL SPECIMEN EXAMINED. **Mexico**. OAXACA: Mpio. Sta. María Chimalapa, ca. 10 km O de Sta. María por la vereda a Chicosaja, 16°53'N, 94°46'W, 30 Mar 1985, H. Hernández G. 1060 (CAS).

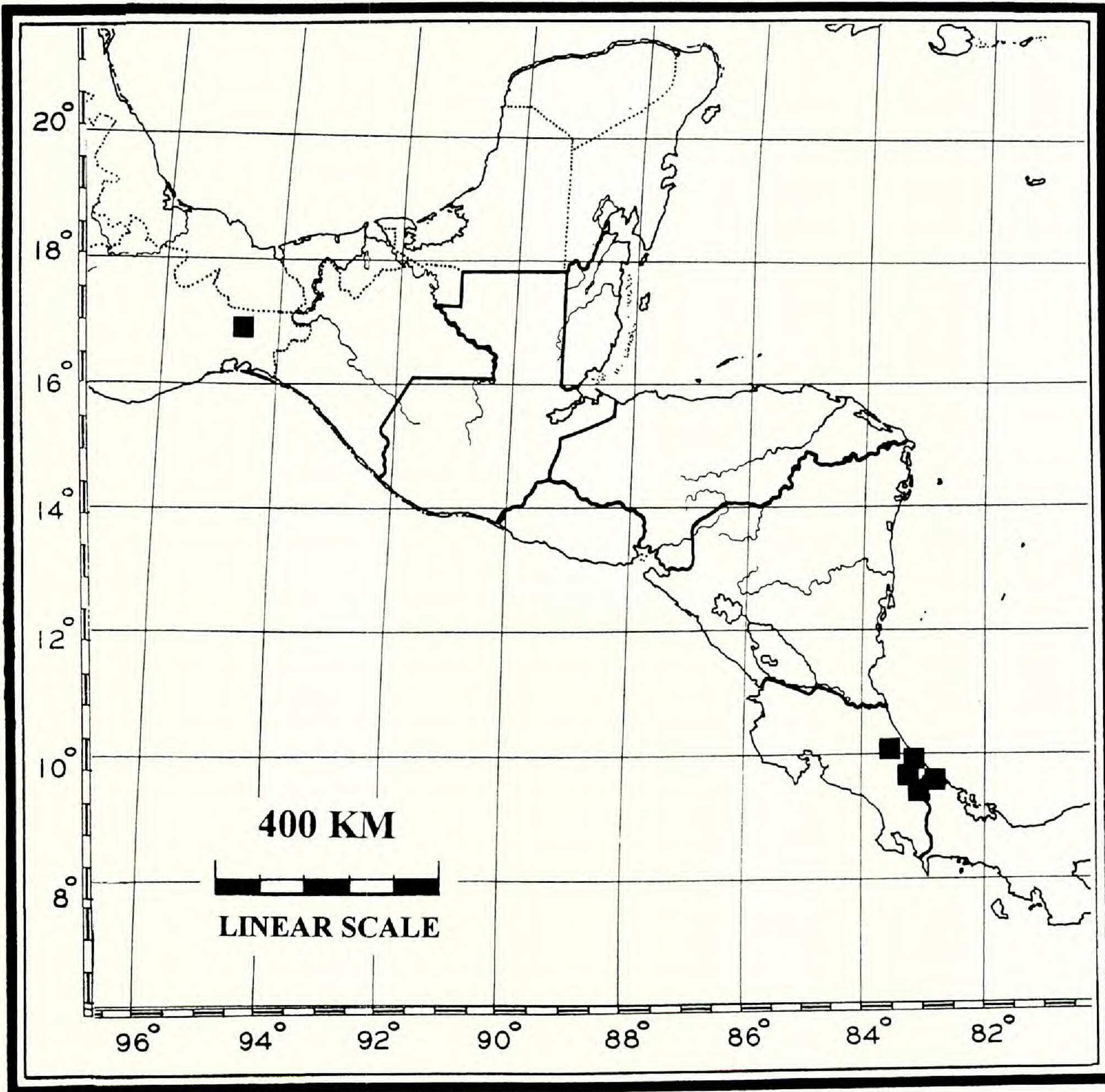


FIG. 2. Distribution of *Streblacanthus monospermus*.

Daniel (1996) noted that *Streblacanthus monospermus* was known from Costa Rica and Panama. Durkee (1986) indicated that the species occurs in lowland rain forests of the Caribbean coastal region. The only known Mexican collection resembles plants from southern Central America by sharing the following characteristics, which are otherwise unknown in the genus: dense adaxial petiolar pubescence, 4-lobed calyces, subsalverform corollas, apically pubescent filaments, one abortive theca per anther, and seeds with a marginal swelling. Mexican plants differ from those of southern Central America only by their shorter capsules (1.5–1.7 vs. 2.0–2.5 cm long).

Pollen of *Streblacanthus monospermus* (Fig. 3) resembles that of other Justiceae in the “*Tetramerium* Lineage.” Pollen from the Mexican collection (Fig. 3a–b) differs from that of collections from southern Central America (Fig. 3c) by having distinct pseudocolpi in the mesocolpia and by being somewhat smaller in size (ca. 35–40 μm vs. 45–70 μm in polar diameter).

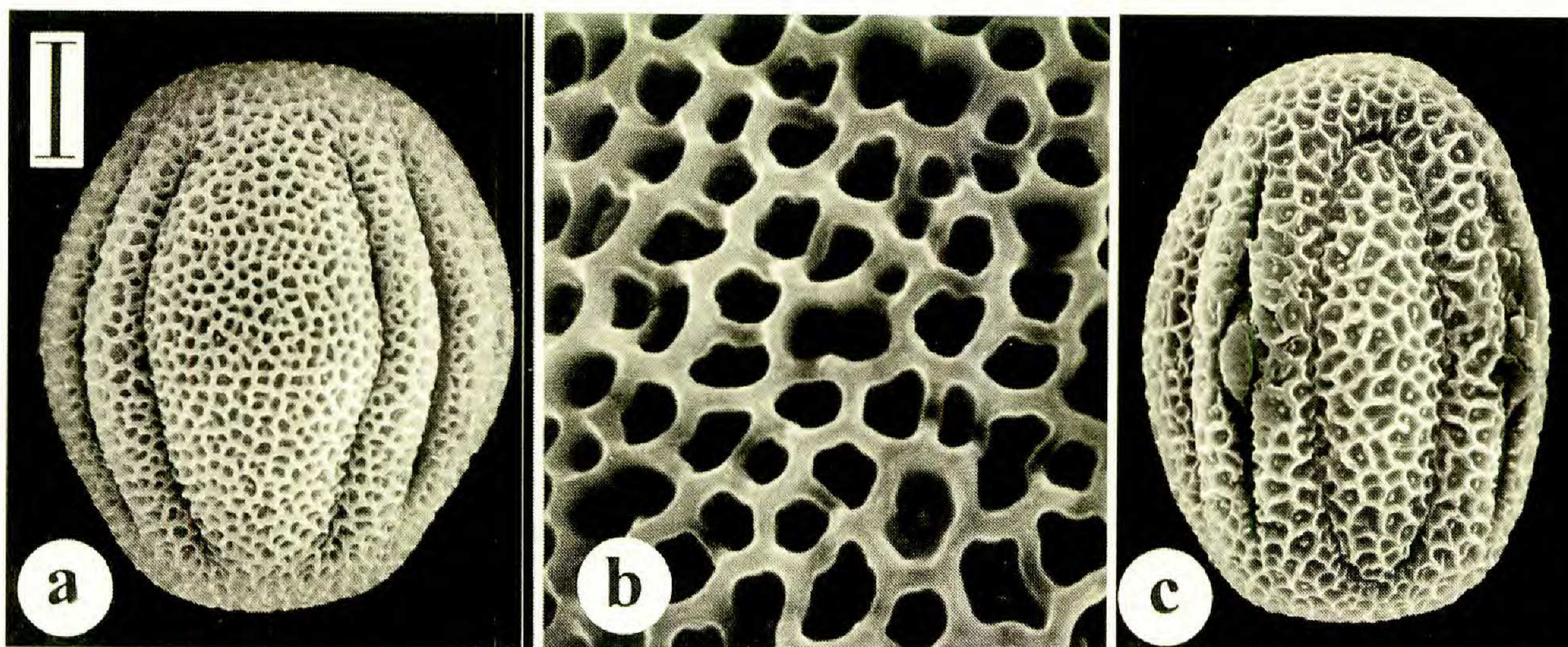


FIG. 3. Pollen of *Streblacanthus monospermus*. a. Hernández G. 1060 (intercolpal view). b. Hernández G. 1060 (detail of surface). c. Daniel et al. 6230 from Costa Rica (intercolpal view). Scale bar: a, 6.8 μm ; b, 1.5 μm ; c, 12.5 μm .

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